Section 3 - Safety

Introduction

High injection pressures and high temperatures are used in the operation of hot runners. To protect the operator in the work place, ensure that all safety devices are installed on the machine.

- Be aware of all warning labels attached to the mold and machine.
- Refer to the machine user manual for safety procedures and checks not included here in the hot runner specific manual.

Notices

To make the manual easier to use, we have included notices throughout that highlight important information. See below.

WARNING
Safety warning indicates a potentially hazardous situation, which if not avoided, could result in serious injury or death.

CAUTION
Caution indicates that damage to equipment is possible if instruction is not followed.

NOTE
Note indicates useful additional information or is used as a reminder of important information.

General Safety Warnings

The equipment supplied is subjected to high injection pressures and high temperatures. Ensure that extreme caution is observed in the operation and maintenance of the hot runner system and the injection molding machines.

- Do not operate the equipment with unconfined long hair, loose clothing or jewelry, including name badges, neckties, etc. These may get caught by the moving belt mechanism and can cause death or serious injury.
- Never disable or bypass a safety device.
- It is highly recommended that all operators wear face shields and use heat resistant gloves when working around the feed throat, purging the machine or cleaning the gates of the mold.
- Check frequently for possible oil leaks/water leaks. Stop the machine and make repairs.
- Remove purgings from the machine immediately.
- Never touch or inspect the timing belt when power is on and motor and controller are connected. Unplug the controller before any maintenance.
- Always cover belt area with proper protecting sheet before any bench test or in-mold testing.
- High voltage and amperage cables are connected to the controller (220VAC). There is also a high voltage cable connection between servo motor and controller.
- Unplug the controller before performing any maintenance work.

General Safety Warnings - Con't

- Hoses fitted to the mold will contain high or low temperature fluids or air under high pressure. The operator must shut down and lockout these systems as well as relieving any pressure before performing any work with these hoses.
- Never perform any work on the mold unless the hydraulic pump has been stopped.
- High voltage and amperage cables are connected to the mold. Electric power must be shut off prior to installing or removing any cables.
- Water and or hydraulics on the mold may be in close proximity to electrical connections and equipment. Water leakage may cause an electrical short circuit. Hydraulic fluid leakage may cause a fire hazard. Always keep water and /or hydraulic hoses and fittings in good condition to avoid leaks.
- All maintenance on *Mold-Masters* products should be performed by properly trained personnel based on local law or regulation requirements. Electrical products may not be grounded when removed from the assembled or normal operating condition. Ensure proper grounding of all electrical products before performing any maintenance to avoid potential risk of electrical shock.

Operating the Mold

Check that all coolant, hydraulic and air lines as well as electrical cables will not interfere with the moving parts of the mold, machine or robot. The lines must be of sufficient length so that they will not strain or pinch when the mold halves separate.

- For water-cooled gate inserts, coolant must be maintained with the proper mixture to prevent corrosion and circuit blockage.
- Care must be taken to ensure the nozzle terminal ends do not come in contact with the hydraulic fluid. The nozzles may short out or become damaged.
- Do not mix electrical power cables with thermocouple extension cables. They are not designed to carry the power load or list accurate temperature readings in each other's application.

Heater Element

To maximize heater element and component life, the temperature must be controlled and maintained within safe operating limits. *Mold-Masters* strongly recommends individual control of each heated component, including heater plates, with a reliable temperature controller that includes soft-start protection.
All *Mold-Masters* heated components are manufactured to standards that ensure safe and reliable operation provided that the following precautions are met:

- Always operate the system using correctly installed "J" type thermocouples connected to a reliable temperature controller with "soft-start" protection.
- Avoid running the system for long periods on "manual" control.
- Use caution when applying power in "manual" mode. Use minimum heat required for the process to avoid overheating and possible damage to components.
- Always replace pinched or damaged thermocouples.
- When "grouping" heated components together and controlling more than one load from a single thermocouple, make sure that the components are of similar material, wattage, size and are exposed to the same thermal conditions.
- When replacing heater plates or other heated components always replace with *Mold-Masters* components of the same type and install as originally specified on *Mold-Masters* general assembly drawings.